9th Indo-Caribbean International Conferences on 'Recent Updates and Global Challenges in PharmaceuticalSciences'

Dr.Ampati Srinivas
Mr.S.Amarnath
Mr.P.Nagaraju

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Editors

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Growing demand for customized pharmaceutics and medical devices makes the impact of additive manufacturing increased rapidly in recent years. The 3D printing has become one of the most revolutionary and powerful tool serving as a technology of precise manufacturing of individually developed dosage forms, tissue engineering and disease modeling

2. Artificial intelligence and machine learning in drug discovery and develop.

Afsha , Vaishnavi, S Priyanka, S Shravani, Aishwarya,.*R. Pruthvi Raj*
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The current rise of artificial intelligence and machine learning has been significant. It has reduced the human workload improved quality of life significantly. This article describes the use of artificial intelligence and machine learning to augment drug discovery and development to make them more efficient and accurate. In this study, a systematic evaluation of studies was carried out; these were selected based on prior knowledge of the authors and a keyword search in publicly available databases which were filtered based on related context, abstract, methodology, and full text.

3. Bioavailability and Bioequivalence in Drug Development

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Bioavailability is referred to as the extent and rate to which the active drug ingredient or active moiety from the drug product is absorbed and becomes available at the site of drug action. The relative bioavailability in terms of the rate and extent of drug absorption is considered predictive of clinical outcomes

4. Community pharmacist and their role in modern healthcare system in india

P.Mery, P.Rupa, M.Shruthi, M.Sindhu, Bhuvaneshwari, A.Priyanka*
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Pharmacist are integral part of our modern healthcare system .they extended their knowledge and skills in prescription processing ,dispensing medicines, monitoring drug interaction and drug therapy ,nutritional and patient conseling ,rational use of drug and auxiliary service. Community pharmacist are the qualified personals who are involved in dispensing prescription correctly and insure safe and judicious use of medicines by the community.
This increase in the use of wide range of new and analogue products in medicine requires special knowledge with regard to their application and management/risk.

Community pharmacist have progressively undertaken the ancillary task of ensuring the quality of product and supply.

5. PRESSURIZED PACKAGING

D.Karthik, P.Ashwitha, S.Shirisha, T.Divya ,K.Sowmya A.Priyanka*
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A system depends on the power of a compressed gas or liquefied gas to expel the contents from the container.

1942-Insecticidal Aerosals
1950 –Topical Aerosals
1965 –Respiratory tract(Epinephrine)Aerosals

Pharmaceutical aerosols is obtained as active ingredients which dissolves, suspended or emulsified in a propellant or a mixture of solvent ,intended for oral or tropical administration in to the eye , nose , ear , rectum and vagina. Aerosals concept originated in 1923 when Eric Rothium of Oslo ,Norway ,develop a wax spray for skis and other products using butane and vinyl chloride has propallents and brass containers fitted with needle valves.

KEY WORDS: Internal pressure, Natural rubber, Packaging User,Spray characteristics.

6. SUSPENSIONS AND CLASSIFICATION OF SUSPENSIONS

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Pharmaceutical suspensions are liquid dosage forms containing finely divided insoluble materials (the suspensoid) distributed somewhat uniformly throughout the suspending medium (suspending vehicle) in which the drug exhibits a minimum degree of solubility. This dosage form is used for providing a liquid dosage form for insoluble or poorly soluble drugs. Also, it is an ideal dosage form for drugs that are unstable in an aqueous medium for extended periods of time. Such drugs are most frequently supplied as dry powder for reconstitution at the time of dispensing. Technically, the term suspension describes a dispersion of a solid material (the dispersed phase) in a liquid (the continuous phase) without reference to the particle size of the solid material. However, the particle size of the solid material can affect both its physicochemical behaviour of suspensions. For this reason, a distinction is usually made between a colloid or colloidal suspension with a particle size range of up to about 1 micron, and a ‘coarse dispersion’ with larger particles. Unfortunately, pharmaceutical suspensions fall across the borderline between colloidal and coarse dispersions, with solid particles generally in the range of 0.1 to 10 micrometre. Suspensions are not optically clear and will appear cloudy unless the size of the particles is within the colloidal range.

7. MUCO ADHESIVE BUCCAL DRUG DELIVERY SYSTEM

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Current innovation in pharmaceuticals determine the merits of mucoadhesive drug delivery system is particularly relevant than oral control release, for getting local systematic drugs distribution in GIT for a prolong period of time at a predetermined rate. The demerits relative with the oral drug delivery system is the extensive presystemic metabolism, degrade in acidic medium as a result insufficient absorption of the drugs. However parental drug delivery system may beat the downside related with oral drug delivery system but parental drug delivery system has significant expense, least patient compliance and supervision is required. By the buccal drug delivery system the medication are directly pass via into systemic circulation, easy administration without pain, brief enzymatic activity, less hepatic metabolism and excessive bioavailability. This review article is an outline of buccal dosage form, mechanism of mucoadhesion, in-vitro and in-vivo mucoadhesion testing technique.

8. DRY SKIN (XEROSIS)

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Dry skin (xerosis) is a common dermatosis affecting people of varying skin types and ages and various areas of the body. It is associated with both skin thickening and skin thinning and is triggered by both exogenous (e.g. climate, environment, lifestyle) and endogenous (e.g. medication, hormone fluctuations, organ diseases) factors.Skin requires a water content of 10–15% to remain supple and intact. This water is either 'static' (i.e. bound) or 'dynamic'. The predominance of hydrophobic substances in intercellular constituents is a means of regulating the humidity of the skin. Emollients, highly effective treatment adjuncts in the management of all dry skin disorders, help to restore damaged intercorneocyte lipid structures and increase the water content of the skin, helping to reduce scaling and improving its barrier function.

9. ROLE OF PHARMACISTS IN DISEASE PREVENTION

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This poster provide Role of pharmacist in disease prevention. As the lockdowns are being observed all over the globe and the national level pharmacy professionals are performing frontline roles this editorial highlights the role of pharmacists in the covid 19 Pandemic.Pharmacists globally are providing service amidst pandemic, including TRIAGE service, seeing patients and reducing the patients burden on health care facilities such as hospitals and GP practices.
KEY WORDS: Pharmacist,Pandemic,Triage services.

10. “FORMULATION AND EVALUATION OF GASTRO RETENTIVE FLOATING MICROBALLONS OF IMIDAPRIL HCL"

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The aim of the present study is to develop floating microballons of Imidapril HCI, an oral anti-hypertensive drug and also used in the treatment of chronic heart failure belongs to ACE inhibitor. It is rapidly and completely absorbed from the gastrointestinal tract but having low bioavailability due to first pass metabolism. Single unit dosage form of drug causes gastric irritation and when converted to multiple unit dosage like microballons causes no gastric irritation and maintains a constant drug concentration in the blood plasma for a longer period of time as drug is rapidly absorbed and eliminated from the body. The Preformulation studies like identification tests, solubility, melting point, compatibility studies and flow properties measured by suitable methods. Floating microballons were prepared by non-aqueous solvent evaporation method by using polymers like ethyl cellulose, HPMC and solvents like ethanol, dichloromethane and tween 80. Floating microballons are evaluated for drug entrapment efficiency, percentage yield, floating buoyancy, particle size, shape and surface morphology by SEM and in vitro drug release studies. Results show that as the concentration of polymer increases, the particle size, percentage yield, in vitro buoyancy and drug release from microballons varies. Percentage drug release at the end of 12 hrs was found to be 99.2 % for formulation F2. Microballons that are prepared by HPMC exhibited excellent drug release when compared with ethyl cellulose due hydrophilicity and viscosity. The SEM photographs revealed that the formulated floating microspheres were spherical in shape, smooth textured and having 500 um sizes.

Key Words: Ethyl Cellulose, Floating Microballons, Hydroxy Propyl Methyl Cellulose (HPMC), Imidapril HCL.

11. Pharmaceutical Emulsions Preparations

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An emulsion is a biphasic liquid dosage form. An emulsion is a mixture of two or more liquids that are normally immiscible to each other but using emulsifying agents one liquid is dispersed into other liquid as droplets.So, there are two phases in an emulsion. One is the dispersed phase and another is the continuous phase. The concept is a dispersed phase (liquid), which is dispersed or spread in the other phase(continuous phase). Emulsions are prepared by using Trituration Method (Dry Gum Method,Wet Gum Method), Bottle or Forbes Bottle Method, Auxiliary Method, Nascent Method or In Situ Soup Method, Beaker Method.

12. COVID NASAL VACCINE 'WORLD'S FIRST INTRA-NASAL VACCINE

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Two needle-free covid-19 vaccines that are delivered through the nose or mouth have been approved for use in china and India. China's vaccine announced on 4th September is inhaled through the nose and mouth as an aerosolized mist and India's, announced 2days later, is administered as drops. A device called a nebulizer turns the liquid vaccine into an aerosol spray that is inhaled. India's vaccine, developed by Bharath biotech in Hyderabad, is approved as a two dose primary inoculation, rather than a booster. The name of this vaccine has been given as BBV154. These mucosal vaccines target thin mucus membrane that line the nose, mouth and lungs. By prompting immune response where SARS-CoV-2 first enters the body, mucosal vaccines could, in theory, prevent even mild cases of illness and block transmission to others people - something injected COVID-19 vaccines have been unable to do. When given as a booster, the vaccine raised blood serum antibody levels significantly more than did a boost given by injection. It works by narrowing the blood vessels in the nose area, reducing swelling and congestion. A very serious allergic reaction for this drug is very rare as for the information we have received, Bharath Biotech Company, which is the main company of Hyderabad, in its initial trial, conducted a clinical trial of its covid-19 Nasal Vaccine on a total of 4000 volunteers. For this nasal vaccine funding was provided by GLENMARK PHARMACEUTICAL LIMITED. This nasal vaccine is given by two doses by the gap of 28 days.

Key Words: Intra-Nasal Vaccine, BBV154, COVID-19

13. MULTIVITASOL - AN ENERGY DRINK

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Sauropus androgynous L. Merr, also known as Katuk, star gooseberry or sweet leaf. It is a shrub grown in some tropical regions as a leaf vegetable which contains about 6-10% protein content. It is one of the most popular leaf vegetables in South Asia and is notable for high yields and palatability. In India it is also known as Multivitamin plant. An excellent sources of pro vitamin A, Carotenoid, Vitamin B and C. It has highly nutritive value and contains phytochemicals which acts as antioxidant. Sauropus androgynous belonging to the family Phyllanthaceae is such

a plant with multiple uses in traditional cuisines and ethno medicinal preparations. S. androgynous can be a supplement to increase breastmilk production and some kinds of beauty products also. The pharmacological activity of Sauropus androgynous leaves as anti-oxidant, anti-diabetic, anti-microbial, anti-fungal, anti-inflammatory, anti-alopecia and anti-anaemia. The extract was formulated to a palatable drink which contains several pharmacological actions. The drink can be used to treat vitamin c deficiencies and it is highly rich in vitamins. This formulation is analysed for accelerated stability in which the formulation is found stable further this formulation is to be proceeded for quantitative and qualitative analysis of vitamins.

Keywords: Sauropus androgynous, Katuk, Phyllanthaceae.

14. Design, Prepare And *In Vitro* Evaluation Of Chronomodulated Pulsatile drug Delivery System of Nefidipine Tablets By Using Polymers

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The present study was aimed at preparing a new time dependent pulsed release system containing „Tablet-in-Capsule" for the programmed release of Nefidipine for the treatment of hypertention. The core tablets were prepared using direct compression method with suitable superdisintegrant agents. Different polymers were used as pH dependent polymers for coating the core tablet. The results of study showed that, lag time prior to drug release was highly affected by the coating level. The dissolution data revealed that the level of coating and the ratio of polymers are very important to achieve an optimum formulation. The in- vitro release from optimized formulation was found to be independent of paddle speed. Stability study of the optimized formulation indicates no significant difference in release profile after a period of one month.

KEY WORDS: Nefidipine, Pulsatile drug delivery, Circadian rhythm, polymers, Drug release.

15. FACTORS AFFECTING MICROBIALSPOILAGE OF PHARMACEUTICAL PRODUCTS

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The physical and chemical status of a pharmaceutical formulation influences the type and extent of microbial spoilage considerably .A specific combination of conditions within a products may favour its degradation by a particular group of microorganisms .contamination of pharmaceutical products with micro organisms could make changes in physicochemical characteristics as well as toxicity of pharmaceutical preparations .All the contents of the dosage forms (active ingredients and excipients) are susceptible to microbial contamination and spoilage. Strict measures are required to control microbial contamination in the formulation of pharmaceutical preparations. There are many factors affecting microbial spoilage of pharmaceutical products .This include nutritional factors, water. Other factors affecting microbial spoilage of pharmaceutical products include Relative Humidity, Oxygen availability, Osmotic Pressure , Oxidation – Reduction balance ,Surface tension ,Temperature, PH, Redox potential , protective components, size inoculums.

Key Words: Microbial spoilage, Pharmaceutical Products, Dosage forms, Formulation.

16. Formulation and in vitro Evaluation of extended release tablets of sulindac

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Sustained release matrix tablets, pellets, and coated pellets for the delivery of sulindac were prepared using cellulose derivatives at various ratios, and evaluated for the dissolution pattern. The release of sulindac from matrix tablets prepared with low viscosity HPMC was relatively fast, and espe- cially the tablets made of Metolose SM released all of sulindac within 1 hr. The release of drug from ta- blets made of other HPMC derivatives were retarded in the order of the following: Pharmacoat 645)Phar- macoat 606)Pharmacoat 606+HPC-L/HPC-L. The most sustained release pattem was observed with the preparation of high viscous polymer, Metolose 90SH. While release of sulindac from matrix type pellet containing 10 mg/cap of Metolose 90 SH or 60SH was completed within Ihr. a prolonged release for- mulation (30% in 1 hr) was obtained by the inclusion of EC. Pellets coated with HPMC showed a fast release pattern (≥80% within 2hrs), whereas pellets coated with HPMC and EC (molar ratio 1:1) show- ed a sustained

release pattern (≥80% in 12 hrs), with the release from EC pellets being the most sus- tained. Fast (naked) and slow release pellets coated with EC. Metolose 60SH 50cps and propylene glycol, and enteric pellets coated with HPMCP 55 and Myvacet were prepared, and combined at vari- ous ratios for the assessment of dissolution pattem. The result indicates the possibility that the de- velopment of 24 hr sustained release delivery systems containing sulindac for oral administration could be achieved by means of combining sustained and fast release pellets at a proper portion.

Keywords: Sulindac. Sustained release matrix tablet. matrix pellet. Pharmacoat, HPMC. Metolose

17. DISSOLUTION ENHANCEMENT OF A POORLY WATER SOLUBLE DRUG USINGWATER SOLUBLE CARRIERS

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Role of various water-soluble carriers was studied for dissolution enhancement of a poorly soluble drug, famotidine, using solid dispersion approach. Carriers like urea, mannitol and sorbitol were used for this purpose. Characterization of the solid dispersions using FTIR and DSC techniques revealed distinct loss of drug crystallinity in the formulation, accounting for enhancement in dissolution rate. All the prepared solid dispersions showed dissolution improvement when compared with the pure drug to varying degrees. Amongthe carriers used urea showed better improvement in dissolution when compared with mannitol and sorbitol.

Keywords: Famotidine, Carrier, Solid dispersion, Characterization, Dissolution enhancement.

18. Enhanced Intestinal Absorption And Bioavailability of Raloxifene HydrochlorideVia Lyophilized Solid Lipid Nanoparticles

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The current oral therapy with raloxifene hydrochloride (RXH) is less effective due to its poor bioavailability (only 2%). Henceforth, an attempt was made to investigate the utility of triglyceride (trimyristin, tripalmitin and tristearin) based solid lipid nanoparticles (SLNs) for improved oral delivery of RXH. The SLN formulations prepared were evaluated for particle size, zeta potential and % entrapment and the optimized formulation was lyophilized. Solid state characterization studies unravel the transformation of RXH to amorphous or molecular state from the native crystalline form. Further the in situ perfusion studies carried out in rat intestine reveal the potential of SLN for enhanced permeation of raloxifene HClacross gastrointestinal barrier. To derive the conclusions, in vivo pharmacokinetic study was conducted in rats to assess the bioavailability of RXH from SLN formulation

compared to drug suspension. Overall a twofold increase in bioavailability with SLN formulations confer their potential for improved oral delivery of RXH.

19. FORMULATION DEVELOPMENT AND INVITRO EVALUATION OF ESCITALOPRAM IMMEDIATE RELEASE TABLETS

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The aim of this study is to formulate and significantly improve the bioavailability and reduce the side effects of immediate release tablets Escitalopram. The precompression blends of Escitalopram were characterized with respect to angle of repose, bulk density, tapped density, Carr's index and Hausner's ratio. The precompression blend of all the batches indicates good to fair flowability and compressibility. Immediate release tablets were prepared with various polymers like PEG 6000, Croscarmellose sodium and Sodium-starch glycolate at different concentration ratios and were compressed into tablets. The formulated tablets were evaluated for various quality control parameters. The tablets were passed all tests. Among all the formulations F7 formulation containing, drug and Croscarmellose sodium showed good result that is 98.12 % in 45 min. Hence from the dissolution data it was evident that F7 formulation is the better formulation. By conducting further studies like invitro studies.

Key words: Escitalopram, PEG 6000, Croscarmellose sodium and Sodium-starch glycolate, immediate release.

20. FIXED DOSE COMBINATIONSBANNED IN INDIA

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Fixed-dose combination (FDCs) medicines containing two or more active components in a fixed proportion in a single dosage form. Several medicines in fixed combination to be taken together, presented in composite packaging (co-pack). FDC drugs are important for the public health perspective and commonly used for the treatment of pain, inflammation, hypertension, diabetes, malaria, tuberculosis, HIV/AIDS, etc.., FDCs important in patients suffering from multiple disorders and to reduce the "PILL BURDEN".

In our world we all depend upon medicines to cure and prevent the diseases, it may be single-drug therapy or a combination of drug therapy. The Improvisation of Fixed-Dose Combinations (FDCs) is becoming more necessary from the public health aspect. In recent years for easy usage and higher efficacy FDC drugs are mostly used. Ministry of Health & Family Welfare (MoHFW) constituted a committee for inspecting the safety and efficacy aspects of FDCs which are unapproved were licensed by State drug Licensing Authorities (SLA) without dueapproval of Drug Control General of India (DCGI), after that committee

discussed total 1083 FDCs which considered as irrational under category ‘a' based on the report initially 344 FDCs were banned by DCGI. This review discusses about the reasons for ban, FDCs benefits, problems associated, approval process and its impact towards the most reputed companies.

Keywords: Fixed-dose combinations (FDCs), Banned drugs, MoHFW, DCGI, SLA, Approval process.

21. FORMULATION AND EVALUATION OF RAFT FORMING TABLET OF ESOMEPRAZOLE

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In the present study, Esomeprazole[1] “RAFT” formation using sodium alginate, HPMC, Sodium bicarbonate Magnesium stearate, talc and calcium carbonate were formulated to deliver Esomeprazole via oral route. The results of this investigation indicate that direct compression method can be successfully employed to formulate Esomeprazole tablets. The Invitro[3] release studies demonstrated that sodium alginate when combined with acid, precipitates and forms a gel. Bicarbonate containing alginate release carbon dioxide as a reaction to gastric acid and the carbon dioxide is entrapped in the gel precipitate forming a “RAFT”. On the other hand, an alginate formulation without gas generation forms a “RAFT” in the stomach. This enables the maximum amount of drug release; hence it is considered as optimizes formulation.The ability of the drug to retain in the stomach is called gastro-retentive drug delivery system(GRDDS)and they are designed to prolong the gastric residence time of dosage form after oral administration .The Esomeprazole exhibits both gastro retentive property and Raft formation nature so that the bioavailability of the drug will be increased.

KEYWORDS

Esomeprazole, Raft formation, Sodium Alginate, Direct compression method, Release kinetics, gastro retentive drug delivery system (GRDDS)

22. ULTRA PERFORMANCE LIQUID CHROMATOGRAPHY- POTENTIAL TOOL FOR PHARMACEUTICAL SEPARATIONS

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Ultra performance liquid chromatography (UPLC) system involves significant technological advances in particle size performance, system optimization, data processing, detector design and control. When all brought together, the specific achievements in each area have created a step-function progress in chromatographic performance. This new technique of analytical separation science uses the principles and practicality of HPLC with increasing the attributes of speed, sensitivity and resolution. Now a day's pharmaceutical industries are in search of new ways to reduce cost and time for analysis of drugs. Analytical laboratories are not exception in this trend. Ultra high performance liquid chromatography (UPLC) with better resolution, assay sensitivity and high sample throughput allows a greater number of analysis to be performed in a shorter period of time and it also impart cost effective advantage over HPLC analysis. So that conventional assay was transferred and optimized for UPLC system.
Key words: UPLC, Chromatography,HPLC and Separation.

23. LC-MS

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Liquid chromatography-mass spectrometry (LC–MS) is a powerful analytical technique used for separation, identification, and quantification of both unknown and known compounds as well as to elucidate the structure and chemical properties of different molecules. It is very useful for analyzing small molecules and offers higher sensitivity and selectivity in the trace analysis of multicomponent containing substances. This chapter deals with several aspects of LC–MS, starting from its basic components like ionization sources, mass analyzer, detectors to statistical methods for data analysis. In addition, some major application of LC–MS in medicinal plant research has been discussed in this chapter.

24. FT-IR

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FTIR stands for "Fourier transform infrared" and it is the most common form of infrared spectroscopy. All infrared spectroscopies act on the principle that when infrared (IR) radiation passes through a sample, some of the radiation is absorbed. The radiation that passes through the sample is recorded. Because different molecules with their different structures produce different spectra, the spectra can be used to identify and distinguish among molecules. In this way, the spectra are like people's fingerprints or DNA: virtually unique.

FTIR is the preferred method of infrared spectroscopy for several reasons. First, it does not destroy the sample. Second, it is significantly faster than older techniques. Third, it is much more sensitive and precise.
These benefits of FTIR derive from the use of an interferometer, which is the infrared "source" and which allows for the greater speed, and the Fourier transform. The Fourier transform is a mathematical function that takes apart waves and returns the frequency of the wave based on time. The "output" of the interferometer is not the spectroscopy spectrum we use, but a graph known as an "interferogram." The Fourier transform converts the interferogram into the infrared spectroscopy spectrum graph we recognize and use.

25. A SIMPLE VALIDATED HPLC/UV METHOD FOR THE QUANTIFICATION OF ANTICANCER DRUG: SILODOSIN IN RAT PLASMA: APPLICATION TO PHARMACOKINETICS

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A simple, selective, accurate HPLC-UV method for the estimation of Silodosin in rat plasma was developed and validated. The method employed to extract the drug from rat plasma was a protein precipitation. The estimation was carried out on a C18 column (Phenomenex Kinetex 250×4.6mm, 5µ) using a mobile phase composed of Buffer and Acetonitrile (60:40 % v/v) which is adjusted to pH-4.8 using ortho phosphoric acid. Mobile phase was run at a flow rate of 1.0 mL/min. The injection volume used was 20 µL. The eluents were detected at a wavelength of 216 nm. The linearity of the drug was found to be over a concentration range of 10-5000ng/mL with the correlation of coefficient (R^2 = 0.992). The accuracy of the analyte was given as mean % recovery which was found to be 91.8%. Intra-day & inter-day precision values were within the acceptance limits i.e <15%. The limit of quantification was found to be 10ng/ml. Freeze-thaw, short-term, long-term & post-preparative stability studies were performed to indicate the stability of drug in plasma.
Key Words: Silodosin, HPLC/UV, rat plasma, Protein precipitation & pharmacokinetics.

26. CANCER IMMUNOTHERAPY

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Immunotherapy is a new class of cancer treatment that works to harness the innate these therapies powers of the immune system to fight cancer. Because of the immune system's unique properties, these therapies may hold greater potential than current treatment approaches to fight cancer more powerfully, to offer longer-term protection against the disease, to come with fewer side effects, and to benefit more patients with more cancer types. cancer immunotherapy – treatments that harness and enhance the innate powers of the immune system to fight cancer. Cancer immunotherapy is powerful it attacks the cancer systemically, throughout the body. It trains the immune system to recognize and target only cancer cells. It

has capacity for memory means durability of protection and a treatment approach that can be applied to nearly all cancers. It has few or no side effects. Immunotherapy works by stopping or slowing the growth of cancer cells, stopping cancer from spreading to other parts of the body, helping the immune system work better at destroying cancer cells. There are several types of immunotherapy such monoclonal antibodies, non specific immunotherapies, oncolytic virus therapy, T-cell therapy and cancer vaccines. The goal of immunotherapy is to give the immune system the upper hand in fighting cancer and restore its ability to eliminate cancer cells. The result is complete, long-lasting cures for patients. By mobilizing the immune system‘s army, we can develop new and better treatments that give our immune defences the upper hand against cancer.

KEYWORDS: T-Cell Theraphy, Cancer vaccines,Immune system.

27. AMYOTROPHIC LATERAL SCLEROSIS

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Amyotrophic lateral sclerosis (ALS) is a devastating neurodegenerative disease that attacks the motor neurons of the brain and spinal cord of a healthy adults. The disease progresses rapidly and is always fatal, living patients paralysed and unable to breath.There is still no known cause of majority of the cases and no effective treatment or cure.

ALS is a disease that causes breath of neurons which control voluntary muscle does not effect conjunction but overall prognosis is difficult to predicit because it varies from person to person there is no cure for ALS at however there are several research studies that are currently in progress exploiting alternative methods of treatment. It may causes muscle stiffness and spams, severe weakness or paralysis typically in legs ,Mood problems such as depression ,Anxiety or mood swings.

Key words: Anxiety,Depression and paralysis.

28. LYMPHATIC SYSTEM & LYMPHATIC DISORDERS.

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Lymphatic system, part of your immune system, it has many functions. They include protecting your body from illness-causing invaders, maintaining body fluid levels, absorbing digestive tract fats and removing cellular waste. Blockages, diseases or infections can affect your lymphatic system’s function.

The lymphatic system is a network of tissues, vessels and organs that work together to move lymph back into your your bloodstream. The lymphatic system is part of your immune system.

Your lymphatic system has many functions. Its key functions include:

Maintains fluid levels in your body:

Absorbs fats from the digestive tract:

Protects your body against foreign invaders:

Transports and removes waste products and abnormal cells from the lymph

29. EVALUATION OF ANTI-ULCER ACTIVITY OF CANTHIUM DICOCCUM EXTRACT IN EXPERIMENTAL ANIMAL MODEL"

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The cause of ulceration in patients is mainly due to hypersecretion of gastric juice and also due to hypersecretion of pepsin. In traditional system of medicine a number of herbal preparations have been used for the treatment of peptic ulcers. There are various medicinal plants has been used for the treatment of gastrointestinal disorders. In view of this, in present study we have to evaluate the anti-ulcer activity of Canthium Dicoccum. Study was carried out, by using three methods ie alcohol, paracetamol and stress induced ulcers in rats pretreated with the doses of 250 mg/kg AQCR and ALCR, 10mg/kg Omeoprazole and 50 mg/kg Ranitidine.

To evaluate the antiulcer activity of aqueous and alcoholic extracts of Canthium Dicoceum leaves (AQCR and ALCR) at 250 doses using different experimentally induced gastric ulcer models in rats

Gastric ulcers were induced in rats by 80% alcohol, paracetamol and forced immersion stress induced methods. In alcohol induced ulcer model, paracetamol induced ulcer model and stress induced model the ulcer index was determined. Where as in stress induced ulcers stress plays an important role in ulcerogenesis

In alcohol-induced ulcers, AQCR and ALCR were effective in reducing lesion index and increasing the gastric mucus content. It was also effective in decreasing ulcer index in paracetamol-induced ulcers. All the results obtained with Canthium Dicoccum were dose dependent. The results suggest that AQCR and ALCR possesses significant and dose dependent antiulcer activity. The antiulcer activity of AQCR and ALCR can be attributed to its cytoprotective and antisecretory action
Key words: Canthium Dicoccum, antisecretory, cytoprotective, gastric ulcer, alcohol induced ulcers, paracetamol-induced ulcers and stress induced ulcers.

30. Anxiolytic and Antidepressant-Like Effects of Conyza canadensis Aqueous Extract in the Scopolamine Rat Model

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Conyza canadensis is a plant widely used in traditional medicine in Morocco for the treatment of varied health challenges. However, to the best of our knowledge, there is no scientific study justifying the traditional use of Conyza extract as an anxiolytic and antidepressant agent. Moreover, data regarding the polyphenolic fraction is limited. Therefore, the present study was conducted to investigate the chemical composition of an aqueous extract obtained from the aerial parts of Conyza, its antioxidant potential, and the anxiolytic and antidepressant-like effects of the sample (100 and 200 mg/kg body weight (bw)) in the scopolamine (Sco) (0.7 mg/kg bw) rat model. To achieve this purpose, a variety of antioxidant tests (including free radical-scavenging activity and lipoxygenase-inhibitory potential

assays) and behavioral procedures, such as the elevated plus-maze and forced swimming tests, were performed. The results demonstrated that the aqueous extract of Conyza canadensis is rich in catechins and flavonoids which possess good antioxidant activity. Additionally, concentrations of 100 and 200 mg/kg of the extract exhibited significant anxiolytic and antidepressant-like profiles following scopolamine treatment. Therefore, we propose that the use of Conyza canadensis could be a new pharmacological target for the amelioration of major depression.

31. PLASTIC CONSUMING BACTERIA

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Ideonellasakaiensis is a bacterium from the genus ideonellaand family comamonadaseae capable of breaking down and consuming the plastic polyethylene terpalate (PET) using it as both a carbon and energy source. The bacterium was originally isolated from a sediment sample taken outside of a plastic bottelling recyclingfacility in Sakai City, Japan discovery

Ideonellasakaiensis was first identified in 2016 by a team of researchers led by khoheioda of Kyoto Institute of Technology and Kenji Miyamoto of Keio University after collecting a sample of PET-contaminated sediment at a plastic bottle recycling facility in Sakai, Japan.[2] The bacteria was first isolated from a consortium of microorganisms in the sediment sample, which included protozoaand yeast-like cells. The entire microbial community was shown to mineralize 75% of the degraded PET into carbon dioxide once it had been initially degraded and assimlatedby Ideonellasakaiensis.

32. DIABETIC NEPHROPATHY

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Diabetic nephropathy is a common complication of type 1 and type 2 diabetes. Over time, poorly controlled diabetes can cause damage to blood vessel clusters in your kidneys that filter waste from your blood. This can lead to kidney damage and cause high blood pressure.
Diabetic nephropathy is a serious complication of type 1 diabetes and type 2 diabetes. It's also called diabetic kidney disease. In the United States, about 1 in 3 people living with diabetes have diabetic nephropathy.Diabetic nephropathy is usually diagnosed during routine testing that's a part of your diabetes management. If you're living with type 1 diabetes, screening for diabetic nephropathy is recommended beginning five years after your diagnosis. If you are diagnosed with type 2 diabetes, screening will begin at the time of diagnosis.Routine screening tests may include:Urinary albumin test. This test can detect the blood protein albumin in your urine. Typically, the kidneys don't filter albumin out of the blood. Too much of the protein in your urine can indicate poor kidney function.Albumin/creatinine ratio. Creatinine is a chemical waste product

that healthy kidneys filter out of the blood. The albumin/creatinine ratio — a measure of how much albumin is in a urine sample relative to how much creatinine there is — provides another indication

33. EVALUATION OF SYNERGISTIC ACTIVITY OF TEPHROCIA PURPUREA AND BACOPA MONNIERI ON ULCER INDUCED RATS .

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Objective: To study the antiulcer activity of aqueous extract of roots of Tephrosia purpurea Bacopa monniera (AETP) using different models of gastric and duodenal ulceration in rats.
Methods: Antiulcer activity of AETP was studied in rats in which gastric ulcers were induced by oral administration of ethanol or 0.6 M HCl or indomethacin or by pyloric ligation and duodenal ulcers were induced by oral administration of cysteamine HCI. AETP was administered in the dose of 1 to 20 mg/kg orally 30 min prior to ulcer induction. The antiulcer activity was assessed by determining and comparing the ulcer index in the test drug group with that of the vehicle control group. Gastric total acid output and pepsin activity were estimated in the pylorus ligated rats. Omeprazole was used as a reference drug. The ulcer index in the AETP treated animals was found to be significantly less in all the models compared to vehicle control animals. This antiulcer property was more prominent in animals in whom ulcers were induced by HCl, indomethacin and pyloric ligation. Omeprazole (8 mg/kg) produced a significant gastric and duodenal ulcer protection when compared with the control group. The anti-ulcer activity of AETP was however, less than that of omeprazole.
Bacopa monniera Wettst. (BM, syn. Herpestis monniera L; Scrophulariaceae), is an Ayurvedic drug used as a rasayana. Its fresh juice was earlier reported to have significant antiulcerogenic activity. In continuation, methanolic extract of BM (BME) standardized to bacoside-A content (percentage-38.0 +/- 0.9), when given in the dose of 10-50 mg/kg, twice daily for 5 days, showed dose-dependent anti-ulcerogenic on various gastric ulcer models induced by ethanol, aspirin, 2 h cold restraint stress and 4 h pylorus ligation. BME in the dose of 20 mg/kg, given for 10 days, twice daily showed healing effects against 50% acetic acid-induced gastric ulcers. Further work was done to investigate the possible mechanisms of its action by studying its effect on various mucosal offensive acid-pepsin secretion and defensive factors like mucin secretion, mucosal cell shedding, cell proliferation and antioxidant activity in rats. BME 20 mg/kg showed no effect on acid-pepsin secretion, increased mucin secretion, while it decreased cell shedding with no effect on cell proliferation. BME showed significant antioxidant effect per se and in stressed animals. Thus, the gastric prophylactic and curative effects of BME may be due to its predominant effect on mucosal defensive factors.

34. RHEUMATOID ARTHRITIS

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Therapy reduction in rheumatoid arthritis (RA) is still a challenge for physicians as well as for patients. Effective therapy with subsequent achievement of low disease activity or even remission is achievable for numerous patients using currently available treatment options. Therapy discontinuation has therefore become a hot topic and the risk of exacerbation of well-controlled RA must be weighed against the medical and economic benefits of reducing or even discontinuing therapy. This article gives a review of data regarding tapering of therapy in RA, focusing on conventional disease-modifying antirheumatic drug (DMARD) monotherapy, reduction of conventional therapy under continuing therapy with biologics and discontinuation of biologics. Important influencing factors for a safe and successful tapering procedure appear to be disease activity, disease duration and the tapering process itself (i.e. gradual dose reduction vs. abrupt discontinuation). Additionally, the so-called nocebo effect should also be taken into consideration for interpretation of drug tapering studies.

35. ALCHOLIC LIVER DISEASE

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Excessive alcohol consumption is a global healthcare problem. The liver sustains the greatest degree of tissue injury by heavy drinking because it is the primary site of ethanol metabolism. Chronic and excessive alcohol consumption produces a wide spectrum of hepatic lesions, the most characteristic of which are steatosis, hepatitis, and fibrosis/cirrhosis. Steatosis is the earliest response to heavy drinking and is characterized by the deposition of fat in hepatocytes. Steatosis can progress to steatohepatitis, which is a more severe, inflammatory type of liver injury. This stage of liver disease can lead to the development of fibrosis, during which there is excessive deposition of extracellular matrix proteins. The fibrotic response begins with active pericellular fibrosis, which may progress to cirrhosis, characterized by excessive liver scarring, vascular alterations, and eventual liver failure. Among problem drinkers, about 35 percent develop advanced liver disease because a number of disease modifiers exacerbate, slow, or prevent alcoholic liver disease progression. There are still no FDA-approved pharmacological or nutritional therapies for treating patients with alcoholic liver disease. Cessation of drinking (i.e., abstinence) is an integral part of therapy. Liver transplantation remains the life-saving strategy for patients with end-stage alcoholic liver disease.

36. Diabetes mellitus

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Diabetes mellitus is a chronic heterogeneous metabolic disorder with complex pathogenesis. It is characterized by elevated blood glucose levels or hyperglycemia, which results from abnormalities in either insulin secretion or insulin action or both. Hyperglycemia manifests in various forms with a varied presentation and results in carbohydrate, fat, and protein metabolic dysfunctions. Long-term hyperglycemia often leads to various microvascular and macrovascular diabetic complications, which are mainly responsible for diabetes-associated morbidity and mortality. Hyperglycemia serves as the primary biomarker for the diagnosis of diabetes as well. In this review, we would be focusing on the classification of diabetes and its pathophysiology including that of its various types

KEY WORDS: Pathogenesis,Insulin,Diabetis.

37. INVESTIGATION OF ANTIMICROBIAL AND LIPID PERTURBING PROPERTIES OF ACYLATED LACTOFERRIN PEPTIDES

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The purpose of this research is to study the antimicrobial capabilities of peptides by assaying the growth inhibition of the gram positive bacteria Staphalococcus aureus caused by the addition of acrylate lactoferin peptides. Lactoferrin peptides are thought to destroy microbial organisms by physically perturbing their cellular membranes. The exact mechanism by which lactoferricin interacts with the cellular membrane of the microbe is not known, but it is believed to vary depending on the lipid composition.

To investigate the lipid perturbing effects of acylated and non- acylated and non-acylated lactoferricin peptides, oriented samples composed of deuterium labeled lipids mimicking bctrial cell membranes will be prepared. The lipid spectra will be monitored, With and without peptide, by nuclear magnetic resonance(NMR) spectroscopy.

38. LIGNANS AS PREVENTOR OF CARCINOGENS

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Cancer is the second leading cause of death worldwide. Although great advancements have been made in the treatment and control of cancer progression, significant deficiencies and room for improvement remains. A number of undesired side effects sometimes occur during chemotherapy Natural therapies, such as the use of plant derived products in cancer treatment, may reduce adverse side effects.

This review will focus on plant derived chemical compounds that is used as anticancer agents and will outline its potential mechanism of action.

39. BIPOLAR DISORDER

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Bipolar disorder, formely called manic depression, is a mental health condition that causes extreme mood swings that include emotional highs as mania or hypomania and lose interest or pleasure in most activities. When your mood shifts to mania or hypomania, less extreme than mania, you may feel euphoric, full of energy or unusually irritable. These mood swings can affect sleep, energy, activity, judgment, behaviour and the ability to think clearly. The symptoms include, unpredictable changes in mood and behaviour, resulting in significant distress and difficulty in life causes for bipolar disorder are run in families and there appears to be a genetic part of this mood disorder. There is also growing evidence that environment and lifestyle issues have an effect on the disorder's severity. Stressful life events or alcohol or drug abuse can make bipolar disorder more difficult to treat.

Keywords: Mania, Hypomania, Mood disorder, Depression.

40. HRT PROS AND CONS

Supriya kulkarni

Hormone replacement therapy (HRT) is the most effective treatment for symptoms of estrogen deficiency. HRT should be recommended in women with premature ovarian insufficiency with advice to continue until the average age of the menopause at 51.4 years. The main benefit of HRT is that it can help relieve most menopausal symptoms, such as: hot flushes. night sweats. mood swings. So in summary, the safest types of HRT are the oestrogen applied through the skin as a patch, gel or spray with body identical micronised progesterone. a generally consistent reduced risk of gastrointestinal cancers, including colorectal cancers.
While HRT can help manage hot flashes and other menopause symptoms, it can also have adverse effects.

Depending on the type of treatment, these may include:
acne, bloating, indigestion, breast tenderness, abdominal or back pain leg cramps, headaches, migraine, nausea, vaginal bleeding, mood changes depression

41. MANIFESTATIONS AND PATHOPHYSIOLOGY OF JAPANESE ENCEPHALITIS VIRUS

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Japanese encephalitis virus (JEV) is the most important cause of viral encephalitis in Asia. It is a mosquito-borne flavivirus, and belongs to the same genus as dengue, yellow fever and west Nile viruses. The first case of Japanese encephalitis virus disease (JE) was documented in 1871 in japan. JEV is the transmitted to human through bites from infected mosquitoes of the culex species. Humans once infected do not develop sufficient uncontrolled virus to infect feeding mosquitoes. The virus exists in a transmission cycle between mosquitoes, pigs and or water birds i.e. enzootic cycle .The disease is predominantly found in rural and pre urban settings, where humans live in closer proximately to these vertebrate hosts. JEV is transmitted mainly during the warm season, when large epidemics can occur. Most JEV infections are milled (fever, headache, neck stiffness, disorientation, coma, and ultimately death spastic paralysis).The incubation period is between 4- 14 days. JE one of the leading forms of viral encephalitis worldwide. Around 30,000 - 50,000 cases of JE and up to 5,000 deaths are reported annually. At present, India has reported 251 cases of Japanese encephalitis in Assam in the first three weeks of July 2022. There is no anti-viral treatment for patients with JE. Treatment is supportive to relieve symptoms and stabilise the patient. To reduce the risk for JE, all travellers to Japanese encephalitis endemics area should take precautions to avoid mosquito bites. Personal preventive measures include the use of mosquito repellents, long sleeved clothes, Coils and vaporizers. There are four main types of JE vaccines currently in use, inactive mouse brain-derived vaccines, inactive Vero cells-derived vaccine live attenuated vaccines and live recombinant vaccines.

Keywords: Japanese encephalitis virus, live recombinant vaccines.

42. NEUROTROPHORIN

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Neurotrophins or neurotrophic factors are the protein substances, which play an important role in growth and functioning of nervous tissue. Neurotrophins are secreted by many tissues in the body, particularly muscles, neuroglia cells called astrocytes and neurons. Facilitate initial growth and development of nerve cells in central and peripheral nervous system. Promote survival and repair of the nerve cells. Play an important role in the maintenance of nervous tissue and neural transmission. Recently, it is found that neurotrophins are capable of making the damaged neurons regrow their processes in vitro and in animal models. This

indicates the possibilities of reversing the devastating symptoms of nervous disorders like Parkinson disease and Alzheimer disease. Neurotrophins act via neurotrophin receptors, which are situated at the nerve terminals and nerve cell body. Neurotrophins bind with receptors and initiate the phosphorylation of tyrosine kinase .The discovery of the capability of neurotrophic factors to protect these neurons lead numerous research groups to focus their efforts in developing therapies aiming at promoting the control of Parkinson´s disease through the delivery of neurotrophic factors to the brain or by boosting their endogenous levels. Both strategies were successful in inducing protection of dopaminergic neurons and motor recovery in preclinical models of the disease. Contrariwise, very limited success was obtained in clinical studies, where glial cell line-derived neurotrophic factor and neurturin were the neurotrophic factors of choice for Parkinson's disease therapy.

Key words: Parkinson's disease, neuroprotection, neurotrophic factors, devastating symptoms

43. Synthesis of Piperonal based Dihydropyrimidinones and evaluation for possible Anticonvulsant and Antibacterial activities

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A new series of piperonal based DHPMs substituted diaryl urea derivatives were synthesized and their anticonvulsant effects on the activity and antibacterial were evaluated. 4-Aminopyridine is a known potassium channel blocker (Yamaguchi and Rogawski, 1992) The presence of anticonvulsant activity against 4-AP induced seizures suggests that the test drugs may have activity against potassium channels. The result of the investigation suggests that the test compounds does possess significant anticonvulsant property in mice, and this supports the ethnomedical use of the plant in the treatment of epilepsy. From our findings, the synthesized drugs may be valuable for the treatment of petitmal generalized seizures (absence or myoclonic).

The antibacterial activity of the test compounds was assayed systematically against four different strains of bacteria. It was observed that few compounds were shown better inhibitory activities when compared to the standard drug Streptomycin.

44. Synthesis, Characterization and Anti Inflammatory activity ofsome novel 5-((6-(methylthio)benzo[d]oxazol-2-yl)methyl)-3-((4-substituted piperazin-1-yl)methyl)-1,3,4-oxadiazole-2(3*H*)-thione derivatives

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The design, synthesis, spectral and biological activities of some new benzo[d]oxazole derivatives are studied in this work. The acid hydrazides 2-(6-

(methylthio)-benzo[d]oxazol-2-yl) acetohydrazide (II) was subjected to cyclization with carbon disulphide under basic conditions to yield 5-((6-(methylthio)-benzo[d]oxazol-2-yl) methyl)-1,3,4-oxadiazole-2(3H)-thione (III) which on aminomethylation with formaldehyde and substituted1-phenylpiperazine afforded a series of Mannich bases (P1-P15). Purity of the compounds has been confirmed by TLC. The structures of these newly synthesized compounds were established on the basis of their IR, ^{1}H-NMR, and Mass spectral data. All the title compounds have been screened for their anti-inflammatory activity. It's worth noting that title compounds (P1-P15) were shown to have anti-inflammatory efficacy as compared to the normal medication, diclofenac at 10 mg/kg p.o, in a carrageenin-induced paw oedema test in rats. The tested compounds showed anti-inflammatory activity ranging from 26.23 % (P7) to 75.63 % (P13) whereas standard drug diclofenac sodium showed 73.66 % inhibition after 3h. The highest activity (78.71 %) was found for the Mannich base, P13.

Keywords: benzo[d]oxazole, Anti-inflammatory, paw edema

45. Design, Synthesis And Biological Evaluation Of 5-[2(3)-Dialkylamino Alkoxy] Indole 2,3-Diones As New Antihistamine Agents

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In the present work, some new 5-[2(3)-dialkylamino alkoxy] Indole 2, 3-diones were prepared from 5-hydroxy isatin. A mixture of 5-hydroxy isatin, dialkylamino alkylhalide in alcoholic potassium hydroxide was stirred at room temperature for 6 hours to get the 5-[2(3)-dialkylamino alkoxy] Indole 2,3-diones. The structures of the products were characterized by IR, NMR, MASS Spectral studies. All the compounds were evaluated for Antihistaminic activity by Histamine chamber method.

Key words: Synthesis, 5-[2(3)-dialky amino alkoxy] indole 2, 3-diones, antihistaminic activity.

46. Synthesis And In Vivo Anti-Inflammatory Activity Of A Novel Series Of Benzoxazole Derivatives

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Novel series of benzoxazole derivatives were prepared by the condensation of methyl-2-(2-aminothiazol-5-ylamino) benzo[d]oxazole-5-carboxylate with various aromatic aldehydes. Thestructures of the synthesized compounds were VI1-VI15 assigned on the basis of elementalanalysis, IR, 1H NMR and mass spectroscopy. These compounds were also screened for anti-inflammatory activity. The recorded percentage of inhibition showed a significant anti-inflammatory activity when compared to the reference anti-inflammatory drug diclofenacsodium.

Key words: Benzoxazole, Carrageenan - induced rat paw edema, Anti-inflammatory activity.

47. SYNTHESIS AND ANTIBACTERIAL EVALUATION OF NOVEL AZAINDOLE DERIVATIVES

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Azaindoles are an important class of nitrogen containing heterocyclics and were identified as the most active and potent classes of compounds with wide range of biological and pharmacological activities. They were extensively used as pharmaceuticals. Although the number of drugs are available in the market even though the search for new molecules is ever demanding. In present work various Azaindoles were synthesized and characterized using physical and spectral data. Finally, the Azaindole derivatives were screened for their In vitro antibacterial activity. Some of the molecules exhibited very good potency when compared with respective standards. The approach is very challenging and was found difficult to get a molecule with potency. Even though, the present molecules were provided novel leads against gram +ve and gram –ve bacteria.

Keywords: Azaindoles, antibacterial, gram +ve, gram –ve, heterocyclics, potent.

48. DRUG FOOD INTERACTIONS AND ROLE OF PHARMACIST

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Interaction between foods and drugs can have profound influence on the success of drug treatment and on the side effect profiles of many drugs. The clinical significance of drug-food interactions can be variable. The effect of drug on a person may be different than expected because that drug interacts with another drug, food,beverages, dietary supplements the person is consuming(drug-nutrient/food interaction) or another disease the person has. Clinically significant drug interactions, which pose potential harm to the patient may result from changes in pharmaceutical, pharmacodynamic properties. Some interactions may be taken as beneficial effect by increasing drug efficacy or diminishing potential side effects .pharmacists in every practice setting need to be vigilant in monitory for potential drug food interactions and advising patient regarding food or beverages to avoid while taking certain medications. It is imperative for pharmacist to keep up date on potential drug food interactions of medications, especially today new drugs, so that they may counsel properly to the patients.
KEYWORDS: Drug food interactions,pharmacist.

49. Stoneman Syndrome (Or) Fibrodysplasia Ossificans Progressiva

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Fibrodysplasia Ossificans Progressiva (FOP), or the Stoneman Syndrome, is a rare condition wherein the body's connective tissues slowly turns into bones. It affects 1 in 2 million people and is caused by a gene mutation. The condition usually starts from the shoulders and neck, making its way down to the legs.

Nearly 90% of patients with fibrodysplasia ossificans progressiva are misdiagnosed and mismanaged and thus undergo unnecessarily interventions. So far, the number of reported existing cases worldwide is about 700. Clinical examination, radiological evaluation, and genetic analysis for mutation of the ACVR1 gene are considered confirmatory tools for early diagnosis of the disease. Association of fibrodysplasia ossificans progressiva with heterotopic ossification is well documented; however, postsurgical exaggerated response has never been reported previously, to the best of our knowledge.

50. ROSEMARY OIL IS AS EFFECTIVE AS MINOXIDIL FOR ANDROGENETIC ALOPECIA"

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Rosmarinus officinalis L. is a medicinal plant with diverse activities including enhancement microcapillary perfusion. The present study aimed to investigate the clinical efficacy of rosemary oil in the treatment of androgenetic alopecia (AGA) and compare its effects with minoxidil 2%. Patients with AGA were randomly assigned to rosemary oil (n = 50) or minoxidil 2% (n = 50) for a period of 6 months. After a baseline visit, patients returned to the clinic for efficacy and safety evaluations every 3 months. A standardized professional microphotographic assessment of each volunteer was taken at the initial interview and after 3 and 6 months of the trial. No significant change was observed in the mean hair count at the 3-month endpoint, neither in the rosemary nor in the minoxidil group (P > .05). In contrast, both groups experienced a significant increase in hair count at the 6-month endpoint compared with the baseline and 3- month endpoint (P < 0.05). No significant difference was found between the study groups regarding hair count either at month 3 or month 6 (> .05). The frequencies of dry hair, greasy hair, and dandruff were not found to be significantly different from baseline at either month 3 or month 6 trial in the groups (P > 0.05) The minoxidil 2%. Patients with AGA were randomly assigned to rosemary oil (n = 50) or minoxidil 2% (n = 50) for a period of 6 months. After a baseline visit, patients returned to the clinic for efficacy and safety evaluations every 3 months. A standardized professional microphotographic assessment of each volunteer was taken at the initial interview and after 3 and 6 months of the trial. No significant change was observed in the mean hair count at the 3- month endpoint, neither in the rosemary nor in the minoxidil group (P > .05). In contrast, both groups experienced a significant increase in hair count at the 6-month endpoint compared with the baseline and 3-month endpoint (P < .05). No significant difference was found between the study groups regarding hair count either at month 3 or month 6 (> .05). The frequencies of dry hair, greasy hair, and dandruff were not found to be significantly different from baseline at either month 3 or month 6 trial in the groups (P > .05). The frequency of scalp itching at the 3- and 6- month trial points was significantly higher compared with baseline in both groups (P < .05). Scalp itching, however, was more frequent in the minoxidil group at both assessed endpoints (P < .05). The findings of the present trial provided evidence with respect to the efficacy of rosemary oil in the treatment of AGA.

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